BPL Interference Test Results Exhibit #6

The following report was recorded by Steve Pearson, KC7TIL, on June 17, 2004 between 8:30 AM and 11:15 AM while operating mobile in the vicinity of the BPL sites in the Cottonwood area.

Equipment used is as follows:

Receiver- Kenwood TS-450 S

Antenna- Webster Bandspanner

Modes- SSB, FM

The report includes a baseline report conducted at the Cottonwood Airport in which readings were taken in the 10 meter, 12 meter, 15 meter, 17 meter, 20 meter, 40 meter and 80 meter bands using both the SSB mode and also the FM mode. Highest S-meter readings were recorded on the 20 meter and 80 meter bands at S-9

Readings were then taken in the vicinity of the American Heritage Academy BPL site in the 10 meter, 12 meter, 15 meter, 17 meter, 20 meter, 40 meter and 80 meter bands using both SSB and FM modes. Highest S-Meter readings were recorded in the 10 meter,15 meter,20 meter, 40 meter and 80 meter bands in the FM mode at S-9+60DB. Highest SSB mode S-meter readings were recorded in the 10 meter and 20 meter bands at S-9+20DB.

Readings were also taken in the vicinity of the Sawmill Cove BPL site in the 10 meter, 12 meter, 15 meter, 17 meter, 20 meter, 40 meter and 80 Meter bands using both SSB and FM modes. Highest S-meter readings were recorded in the 20 meter and 80 meter bands in the Fm mode at S-9+60DB. Highest SSB mode S- meter readings were recorded in the 80 meter band at S-9+10DB.

6-17-07

Radio: Kenwood TS-480S **Antenna:** Webster Bandspanner
Operator: Steve Pearson KC7TIL

Cottonwood Airport Baseline **Location:** 34.735N 112.039W Mobile

Band (m)	Frequency MHz	Signal Level	Mode	Time:	0830
10	28.500	S4	USB		
10	28.500	S5	FM		
12	24.900	S2	USB		
12	24.900	S3	FM		
15	21.305	S1	USB		
15	21.305	S0	FM		
17	18.130	S1	USB		
17	18.130	S2	FM		
20	14.240	S6	USB		
20	14.240	S9	FM		
40	7.260	S1	LSB		
40	7.260	S2	FM		
80	3.980	S7	LSB		
80	3.980	S9	FM		

American Heritage Academy **Location:** 34.73272N 112.00520W Mobile

Band (m)	Frequency MHz	Signal Level	Mode	Time:	0915
80	3.980	S9+10db	LSB		
80	3.980	S9+60dB	FM		
40	7.260	S9+10dB	LSB		
40	7.260	S9+60dB	FM		
20	14.240	S9+20dB	USB		
20	14.240	S9+60dB	FM		
17	18.130	S5	USB		
17	18.130	S3	FM		
15	21.305	S9	USB		
15	21.305	S9+60dB	FM		
12	24.900	S3	USB		
12	24.900	S3	FM		
10	28.500	S9+20dB	USB		
10	28.500	S9+60dB	FM		

Sawmill Cove Apartments Location: 34.72843N 112.00575W Mobile

Time: 1015

Band (m)	Frequency MHz	Signal Level	Mode
10	28.500	S4	USB
10	28.500	S9	FM
12	24.900	S1	USB
12	24.900	S1	FM
15	21.305	S2	USB
15	21.305	S5	FM
17	18.130	S1	USB
17	18.130	S3	FM
20	14.240	S7	USB
20	14.240	S9+60dB	FM
40	7.250	S7	LSB
40	7.250	S9+20dB	FM
80	3.960	S9+10dB	LSB
80	3.960	Full Scale	FM

BPL Interference Test Results Exhibit #7

The following report was recorded by Greg Allen, N6WCD, on June 17, 2004 between 8:30 AM and approximately 11:30 AM in the vicinity of the BPL sites in Cottonwood.

Equipment used is as follows:

Radio- Yaesu FT-897 solid state

Mode- SSB, FM

Antenna- Webster Bandspanner

The report includes a baseline report that was taken at the Cottonwood airport and included readings from the 10 meter, 12 meter, 15 meter, 17 meter, 20 meter, 40 meter and 80 Meter bands in both SSB and FM modes. Highest readings recorded were in the 20 meter band in the SSB mode at S-4.

Readings were then taken in the vicinity of the American Heritage Academy BPL Site on the 10 meter, 12 meter, 15 meter, 17 meter, 20 meter, 40 meter and 80 meter bands in both the SSB and FM modes. Highest S-meter readings were in the 15 meter, 20 meter, 40 meter bands in the FM mode and ranged from S-9+82 DB to S-9+95DB. Highest readings in the SSB mode were in the 10 meter, 15 meter, 20 meter and 80 meter bands and ranged from S-9+55DB to S-9+85DB

Readings were also taken in the vicinity of the Sawmill Cove BPL site on the 10 meter, 12 meter, 15 meter, 17 meter, 20 meter, 40 meter and 80 meter bands in both SSB and FM modes. Highest S- meter readings were in the 80 meter and 20 meter bands in the FM mode at S-9+65DB to S-9+full scale. Highest readings in the SSB mode were in the 80 meter, 40 meter, 20 meter and 10 meter bands and ranged from S-9+ 40DB to S-9+70DB

6-17-07

Radio: Yaesu FT-897 Antenna: Webster Bandspanner
Operator: Greg Allen N6WCD

Cottonwood Airport Baseline Location: 34.735N 112.039W Mobile

Band (m)	Frequency MHz	Signal Level	Mode	Time:	0830
10	28.500	S0	USB		
10	28.500	S0	FM		
12	24.900	S0	USB		
12	24.900	S0	FM		
15	21.305	S0	USB		
15	21.305	S0	FM		
17	18.130	S0	USB		
17	18.130	S0	FM		
20	14.240	S4	USB		
20	14.240	S1-S2	FM		
40	7.260	S2	LSB		
40	7.260	S2	FM		
80	3.980	S2	LSB		
80	3.980	S3	FM		

American Heritage Academy Location: 34.73272N 112.00520W Mobile

Band (m)	Frequency MHz	Signal Level	Mode	Time:	0915
80	3.980	S9+55dB	LSB		
80	3.980	S9+65dB	FM		
40	7.260	S9+58dB	LSB		
40	7.260	S9+62dB	FM		
40	7.260	S9+62dB	Packet		
20	14.240	S9+65dB	USB		
20	14.240	Full Scale	FM		
17	18.130	S0	USB		
17	18.130	S0	FM		
17	18.130	S0	Packet		
15	21.305	S9+65dB	USB		
15	21.305	S9+95dB	FM		
15	21.305	S9+95dB	Packet		
12	24.900	S0	USB		
12	24.900	S0	FM		
12	24.900	S0	Packet		
10	28.500	S9+75dB	USB		
10	28.500	Full Scale	FM		

Sawmill Cove Apartments Location: 34.72843N 112.00575W Mobile

Time: 1015

Band (m)	Frequency MHz	Signal Level	Mode
10	28.500	S9+40dB	USB
10	28.500	S9+40dB	FM
10	28.500	S9+40dB	Packet
12	24.900	S0	USB
12	24.900	S0	FM
15	21.305	S0	USB
15	21.305	S0	FM
17	18.130	S0	USB
17	18.130	S0	FM
20	14.240	S9+50dB	USB
20	14.240	S9+65dB	FM
40	7.250	S9+45dB	LSB
40	7.250	S9+40dB	FM
80	3.980	S9+70dB	LSB
80	3.980	Full Scale	FM
80	3.980	Full Scale	Packet

The fixed site location of David Kiggins, KB7KMR, at 443 Rocking Chair Rd. Cottonwood, AZ who is 0.56 miles away from the Sawmill Cove BPL site and 0.71 miles away from the American Heritage Academy BPL Site.

BPL Interference Test Results #1

The following report was taken by David Kiggins, KB7KMR, Mike Kinney, KU7W, and Norm Vandiver, N7VF on June 4, 2004 at approximately 7:00 PM.

David Kiggins had indicated that he had been hearing BPL signals on the air at which time Mike Kinney, KU7W and Norm Vandiver, N7VF went over to David's house to confirm whether he was hearing BPL signals from his location or not. It was confirmed that he was hearing BPL signals on 10 meters, 30 meters and 80 meters.

Equipment used is as follows:

Radio- Icom IC 751 A solid state

Pre-Amp- Off

Mode- SSB

Antenna- Maypole for 10 to 160 meters 20 feet in the air

Distance of antenna from neighboring houses-300+ feet

Readings were taken in the 80 meter band between 3.548 Mhz and 3.892 Mhz, in the 30 meter band at 10.057 Mhz and in the 10 meter band between 28.136 Mhz to 29.026 Mhz.

Dave Kiggins KB7KMR
GPS Location: 30° 43' 54" N, 111° 59' 31" W
This location is 7.1 miles from the American Heritage Academy (end of East Cherry Street, Cottonwood, AZ)
This location is 5.6 miles away from Sawmill Cove housing division (Cottonwood Street, Cottonwood, AZ)
June 4, 2004, approx. 7:00 p.m.

Station equipment: ICOM 751A, Preamplifier OFF, SSB Mode, Antenna is a homemade maypole 20' in air.

Interference measurements were made at:

Freq. 3.548 MHz	Signal strength	S5 ½
3.625 MHz	"	S6
3.892 MHz	"	S7
10.057 MHz	"	S4
28.136 MHz	"	S1 Q5
29.026 MHz	"	S1 Q5

The fixed site location of David Kiggins, KB7KMR, at 443 Rocking Chair Rd. Cottonwood, AZ who is 0.56 miles away from the Sawmill Cove BPL site and 0.71 miles away from the American Heritage Academy BPL Site.

BPL Interference Test Results #2

The following report was taken by David Kiggins, KB7KMR, on June 5, 2004 and June 16, 2004 from his home location of 443 Rocking Chair Road Cottonwood, AZ. As depicted above David lives 0.56 miles from the Sawmill Cove BPL site and 0.71 miles from the American Heritage Academy BPL site.

Equipment used is as follows:

Radio- Icom IC 751 A solid state

Mode- SSB, AM

Antenna- Maypole for 10 to 160 meters

Distance of antenna from neighboring houses-300+ feet

Measurable interference is recorded on 160 meters, 80 meters, 40 meters and 10 meters along with 5.000 Mhz, a WWV frequency.

Log of interference:

Date	Time	Frequency	Receive Mode	Interfering signal strength	Description
06/05/04	08.20	160m	LSB	8S	BPL
" " " "	" "	80M	"	10S	BPL
" " " "	" "	40M	"	5S	BPL
" " " "	" "	20M	"	1S	BPL
" " " "	" "	10M	"	3S	BPL
06/16/04	02:11	1.850 5.000	AM/LSB	5S	BPL

Report of Harmful Interference From a Broadband Over Power Line Trial or Deployment

Name of complainant: David Kiggins CBT

Call sign (if applicable): KB7KMR

Station location: 34° 43M 54N 111° 59M 31 SW

Mailing address (if different): C/o 443 Rocking Chair RD Yavapai County

City, State, Zip: Cottonwood Yavapai County Arizona

Telephone: 928-634-8082 Email: kb7kmr@commspeed.net

Description of Interference: From 1.710 Mhz to 30. Mhz

Data Modem clicking noise every 100 khz

I can no longer listen to my short wave broadcast's

Description of station: Ham Radio 160 M to 10 Meters MayPole

Receiver(s) affected: ICOM IC-751A

Antenna type: MAYPOLE 10 to 160 Meters

Antenna location: Next to home 8ft ground

Distance of antenna from own house (feet): metal building ant 25 ft from station

Distance of antenna from neighboring houses (feet):

300+ . no noise from neighbors or power lines at station

Distance of antenna from power distribution line or equipment (feet): first unit .56 miles second unit .71 miles

The fixed site location of David Kiggins, KB7KMR, at 443 Rocking Chair Rd. Cottonwood, AZ who is 0.56 miles away from the Sawmill Cove BPL site and 0.71 miles away from the American Heritage Academy BPL Site.

BPL Interference Test Results #3

The following report was recorded by Mike Kinney, KU7W and Norm Vandiver, N7VF on June 12, 2004 using a mobile station parked at the residence of David Kiggins, KB7KMR, located at 443 Rocking Chair Rd. Cottonwood, Az. at 9:00 AM

Equipment used is as follows:

Radio- Icom IC706MK11G solid state
Pre-Amp- Off
Modes- SSB, CW, AM. FM

Selectivity- 3.00 Khz SSB, CW with 2.4 Khz filter installed
8.00 Khz AM
8.00 Khz FMN
12.00 Khz FM

Antenna- Hustler 54 inch aluminum mast with 400 hundred watt resonators Mounted on the right rear bumper of a 2003 Chevrolet pickup.

Feedline- 18 feet RG-58 with velocity factor of 66% and rated loss of 4.5 DB at 100 feet.

Readings were taken in the 10 meter, 12 meter, 15 meter, 17 meter, 20 meter, 30 meter, 40 meter and 80 meter bands using different modes from David's front yard to see what the mobile station might pickup differently than what he was recording from the home station using a full length all band Maypole antenna.

Highest readings were recorded in the 80 meter band where the mobile antenna was most resonant at 3.850 Mhz to 3.930 Mhz.

Address- 443 Rocking Chair Rd.- Cottonwood, Az. 86326
BPL signal report taken at the residence of David Kiggins
KB7KMR on June 12, 2004 9:00am in the morning by Mike Kinney
KU7W and Norm Vandiver N7VF using the following equipment.

Radio-Icom 706MK11G Mobile operation
Preamp off
Selectivity: 3.00 khz SSB,CW with 2.4 Khz SSB filter installed
8.00 khz AM
8.00khz FMN
12.00 khz FM

Antenna- Hustler 54 inch mast bumper mounted, located right rear corner of 2003 Chevrolet pickup, using 400 watt resonators for each band.

Coax- 18 feet RG-58. Rated loss 4.5 db at 100 feet. Velocity Factor- 66%

Residence location by GPS is:
34 degrees 43 minutes 54 seconds North by 111 degrees 59 minutes 31 seconds West

BPL Test sites are .71 miles to American Heritage Academy and .56 miles to Sawmill cove area straight line as marked by the GPS unit. GPS unit used is a Sporttrac by Magellan. 8 satelites were locked 2 of which were WAAS satelites.

Freq. in Mhz	SSB Mode	CW Mode	AM Mode	FM Mode	
28.045	S-0	S-0	S-0	S-0	Note:
28.25	S-0	S-0	S-0	S-1	signals audable in 10
28.45	S-0	S-0	S-0	S-1	meter band but not
28.65	S-0	S-0	S-0	S-1	much signal strength
28.85	S-0	S-1	S-0	S-1	
29	S-0	S-0	S-0	S-1	
29.05	S-0	S-0	S-0	S-1	
29.2	S-0	S-0	S-0	S-0	
29.3	S-0	S-0	S-0	S-0	
29.35	S-0	S-0	S-0	S-0	
24.9	S-0	S-0	S-0	S-0	Note:
24.96	S-0	S-0	S-0	S-0	Signals audable in 12
24.99	S-0	S-0	S-0	S-0	meter band but no signal Strength
21.045	S-0	S-0	S-0	S-0	
21.2	S-1	S-0	S-0	S-1	Note:
21.3	S-0	S-0	S-0	S-0	Signals audable in 15
21.4	S-0	S-0	S-0	S-0	meter band but not much
21.45	S-0	S-0	S-0	S-0	signal strength

Freq. in Mhz	SSB Mode	CW Mode	AM Mode	FM Mode	
18.059	S-0	S-0	S-0	S-1	Note:
18.121	S-0	S-0	S-0	S-0	Signals audable in 17 meter
18.16	S-0	S-0	S-0	S-0	band but not much signal Strength
14.01	S-0	S-0	S-0	S-0	
14.15	S-0	S-0	S-2	S-2	Note:
14.25	S-0	S-0	S-0	S-0	Signals audable in 20 meter
14.3	S-0	S-0	S-0	S-0	band but not much signal
14.35	S-0	S-0	S-0	S-0	strength
10	S-0	S-0	S-0	S-0	
10.057	S-0	S-0	S-0	S-0	
10.137	S-0	S-0	S-0	S-0	
7.06	S-0	S-0	S-0	S-0	Note:
7.102	S-0	S-0	S-0	S-0	Signals audable in 40 meter
7.2	S-0	S-1	S-0	S-0	band but not much signal
7.25	S-0	S-0	S-0	S-0	strength
7.3	S-0	S-0	S-0	S-0	
3.405	S-2	S-1	S-6	S-4	Note: Antenna resonant
3.51	S-0	S-1	S-1	S-2	Point is very narrow on this band
3.772	S-0	S-1	S-1	S-1	1 to 1 SWR at 3.890 Mhz.
3.803	S-0	S-0	S-0	S-2	
3.85	S-0	S-0	S-5	S-9	
3.89	S-6	S-8	S-8	S9+ 10 db	Antenna resonant here
3.9	S-6	S-7	S-8	S9+10db	Antenna resonant here
3.93	S-0	S-5	S-6	S-6	
3.95	S-1	S-0	S-5	S-3	
4	S-0	S-0	S-0	S-1	

Spectrum Analyzer Analysis of BPL System

The following spectrum analyzer tests were performed by Mark Hills of Marca Electric Inc. using a calibrated spectrum analyzer on June 20, 2004. Machine being used is Tek 2712.

Mark's comments concerning these signal plots are as follows:

"Here are the plots for the BPL issue. I think that Sawmill and the ones at the school are the best. I know for a fact that if this were a cable system they would be on this much leakage in a heartbeat.

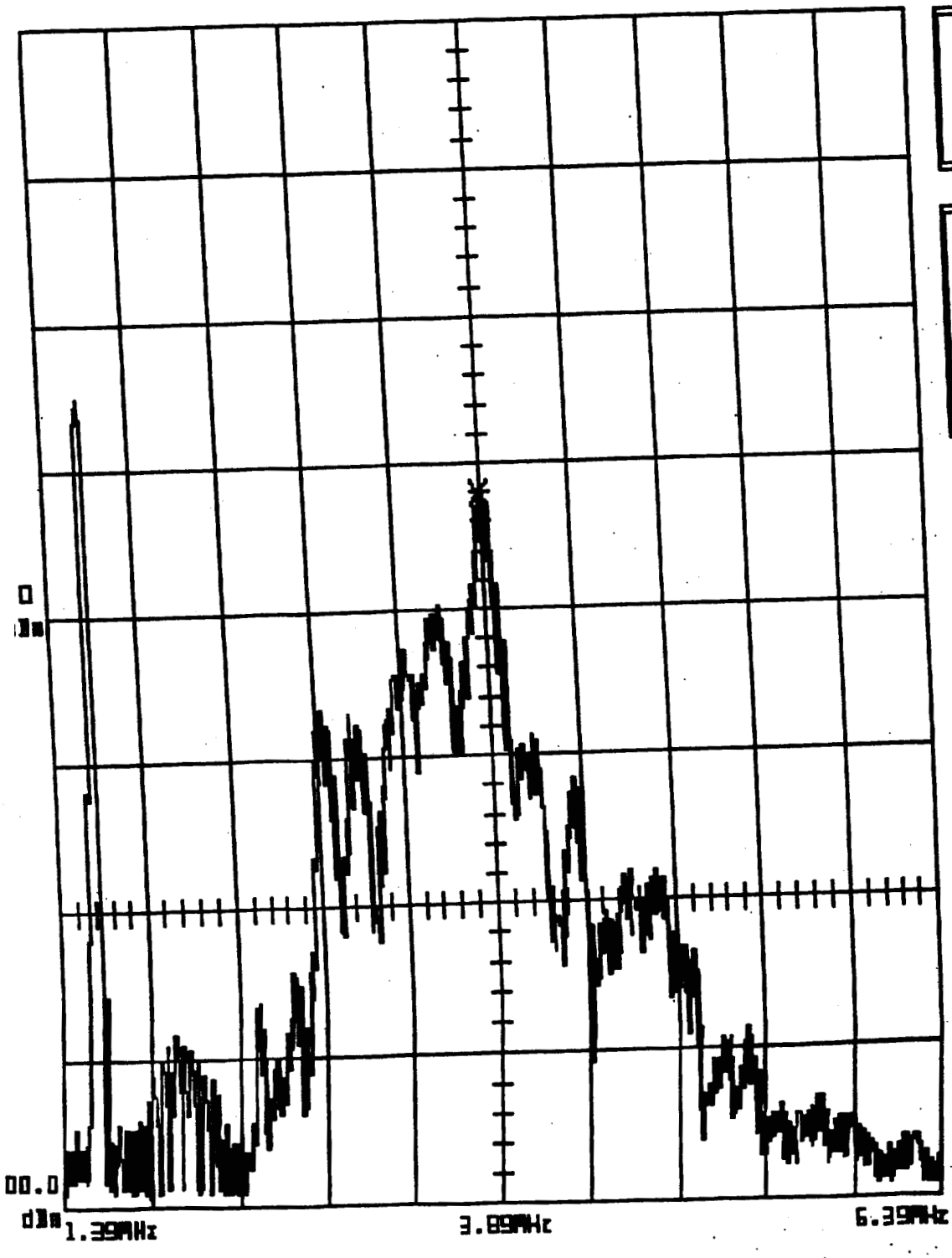
From my hands on experience, any signal above -60 can be heard and cause interference. For us Hams an emergency signal can be a lot lower than this. It is hard to tell you what to write except that this is more signal than most Ham communications. The receivers can pick out a signal that my analyzer can't even see. Some 900 Meg. STL links that I have done are far less level than this. KNOT here in town has a 900 Meg. Link that is -52 DBU. The BPL is at least this level. All you can do is send in a report that you are being interfered with on these frequencies and this is the proof. Talk is cheap but we have the pictures. To me a wide signal like this is pure interference. No commercial station or any transmitter that is FCC approved could never be allowed to radiate such a signal.

In the past the cable companies used to carry a test RF signal on the aircraft band and the FCC banned any sending of any RF on the aircraft band. The only signal that looks like this is from a satellite in space. Because it is purely directional it can use a spectrum. School 2 is a max hold, it only shows peaks."
Mark

Tek

2712

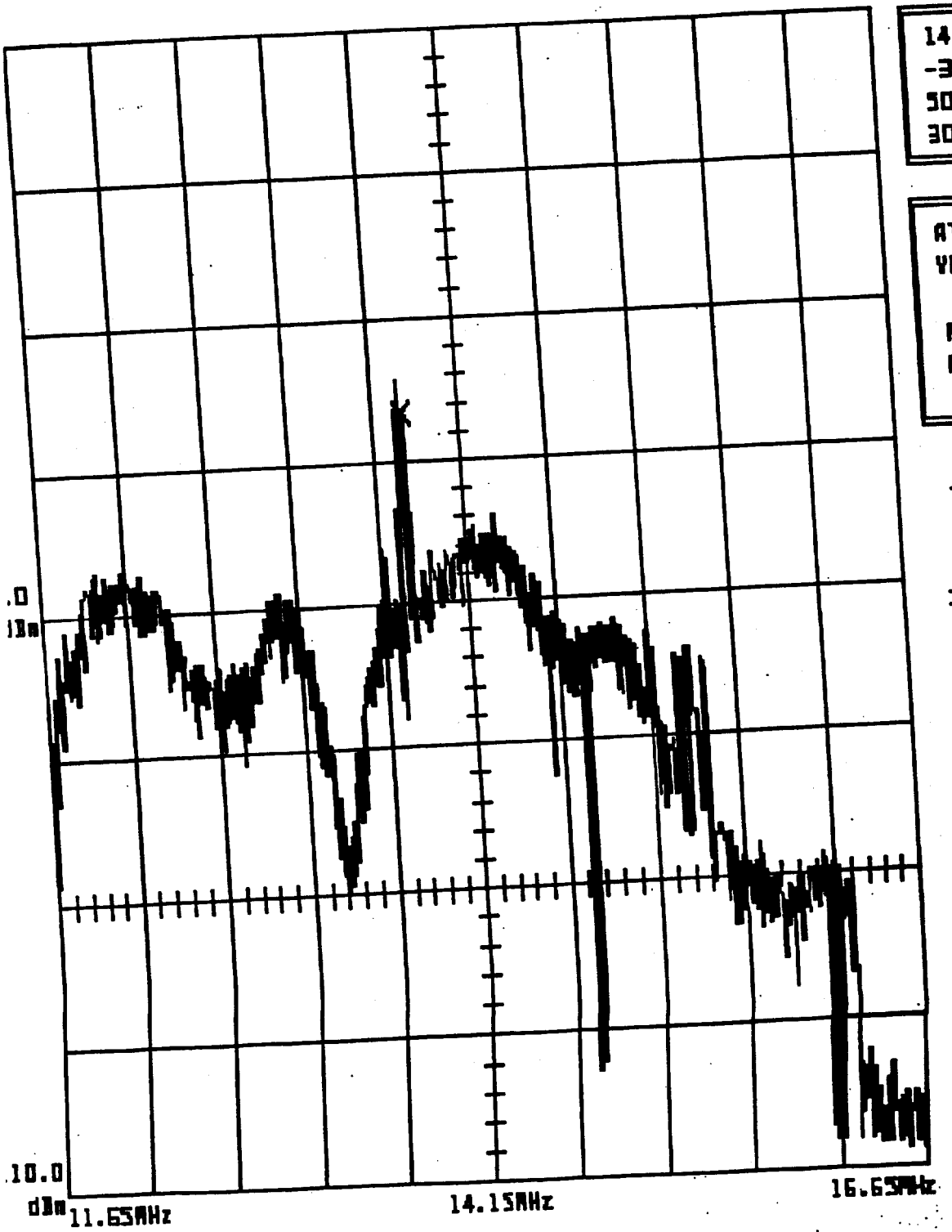
A-


3.89MHz
-20.0dBm
500.0kHz/
30KHz RBW
ATTN 10dB
VF 300Hz
10 dB/
A 3.89MHz
A -52.3dBm
TIME: 200 ms/DIV
MARKER 1
MAX/MIN MODE
TIME: 15:01:26
DATE: 20-JUN-04
Note: Readouts
correspond to
waveform 'A'
0
dBm
00.0
dBm
1.39MHz
3.89MHz
6.39MHz

Tek

2712

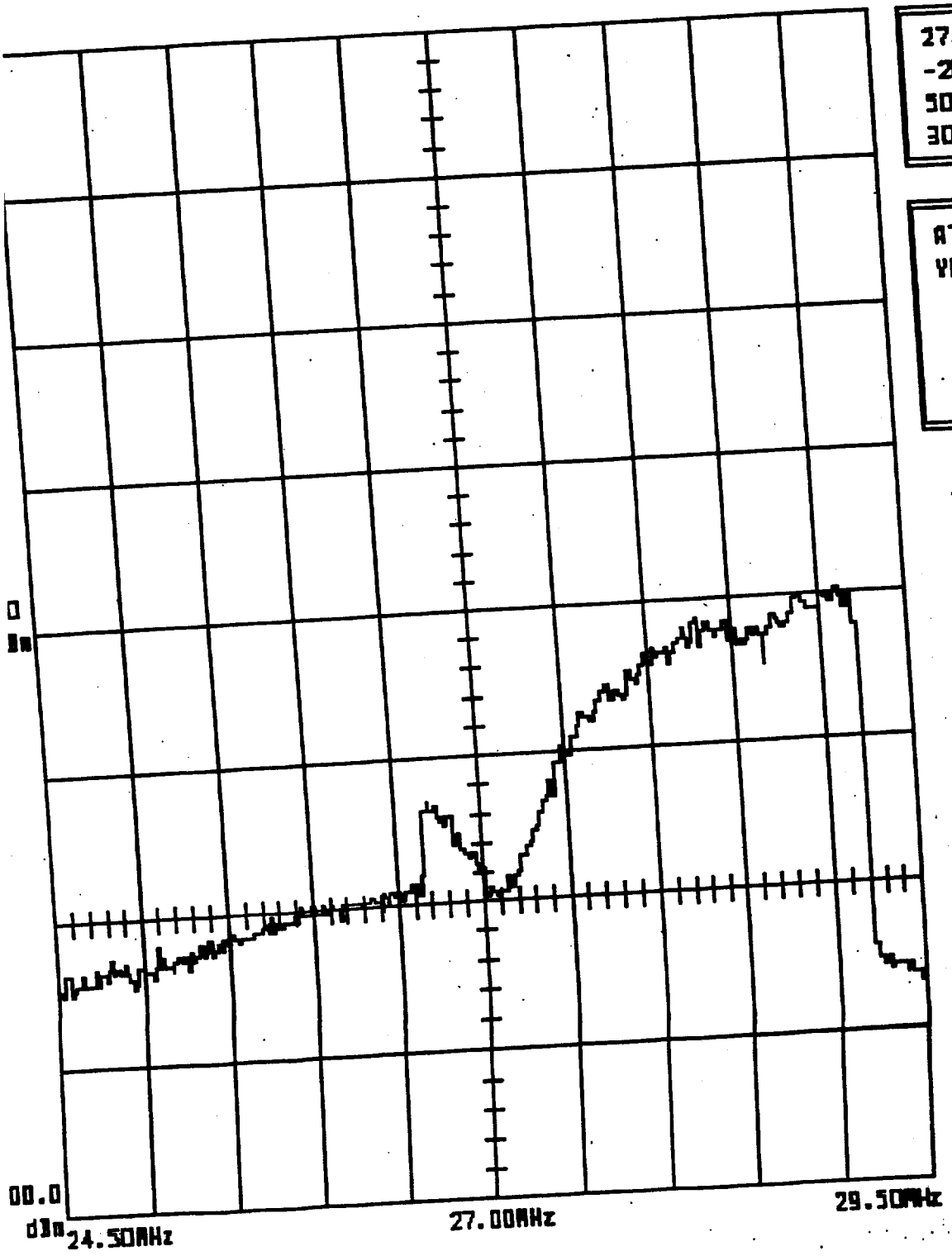
C-


14.15MHz
-30.0dBm
500.0kHz/
30KHz RBW
ATTN 0dB
VF 300Hz
10 dB/
R 13.82MHz
R -56.7dBm
TIME: 200 ms/DIV
MARKER 1
MAX/MIN MODE
TIME: 16:13:58
DATE: 20-JUN-04
Note: Readouts correspond to waveform 'C'
.0
dBm
10.0
dBm
11.65MHz
14.15MHz
16.65MHz

Tek

2712

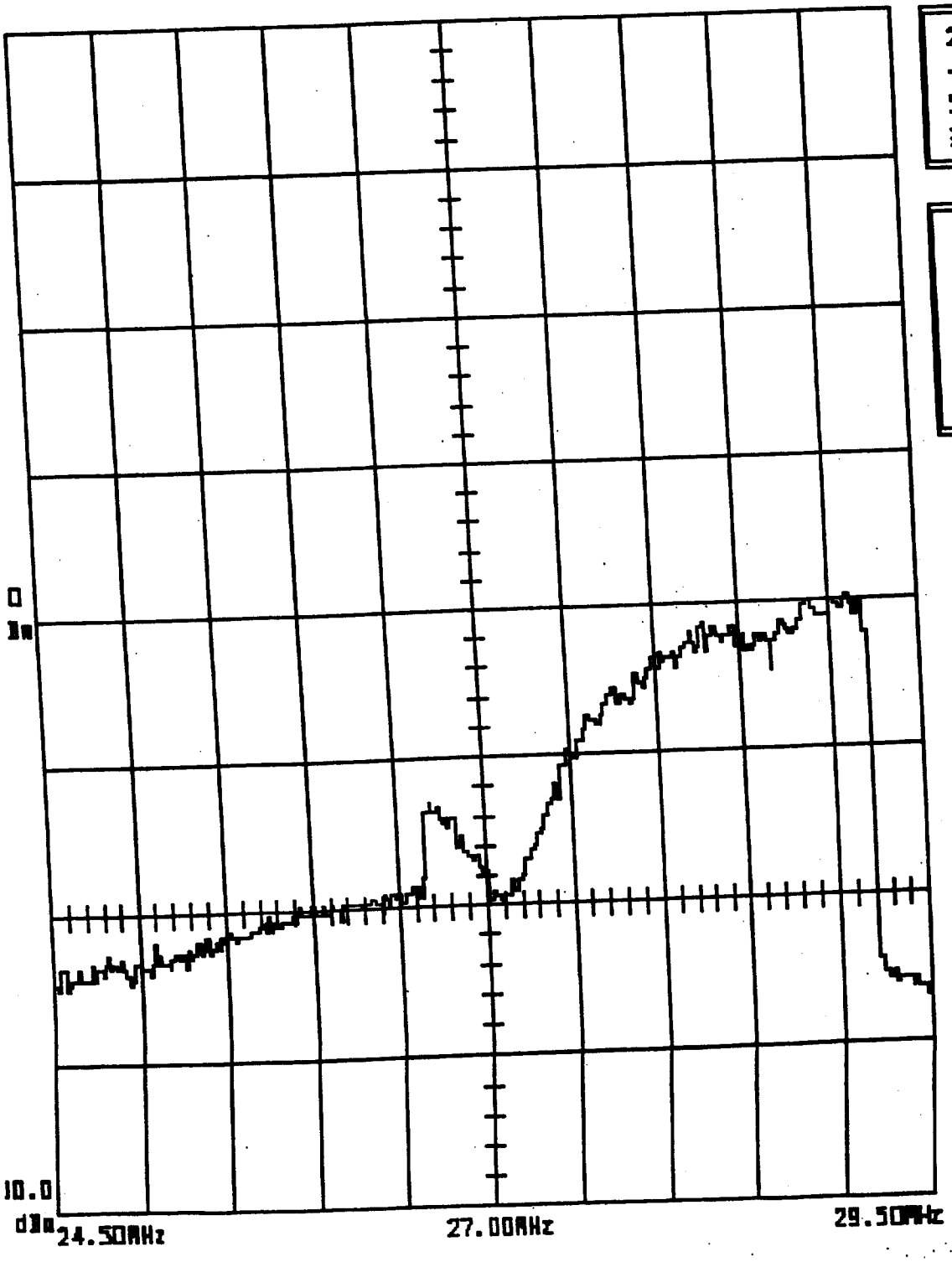
B-


27.00MHz
-20.0dBm
500.0kHz/
30KHz RBW
ATTN 10dB
VF 300Hz
10 dB/
TIME: 200 ms/DIV
MAX/MIN MODE
TIME: 15:58:21
DATE: 20-JUN-04
Note: Readouts correspond to waveform 'B'
0
dBm
00.0
dBm
24.50MHz
27.00MHz
29.50MHz

Tek

2712

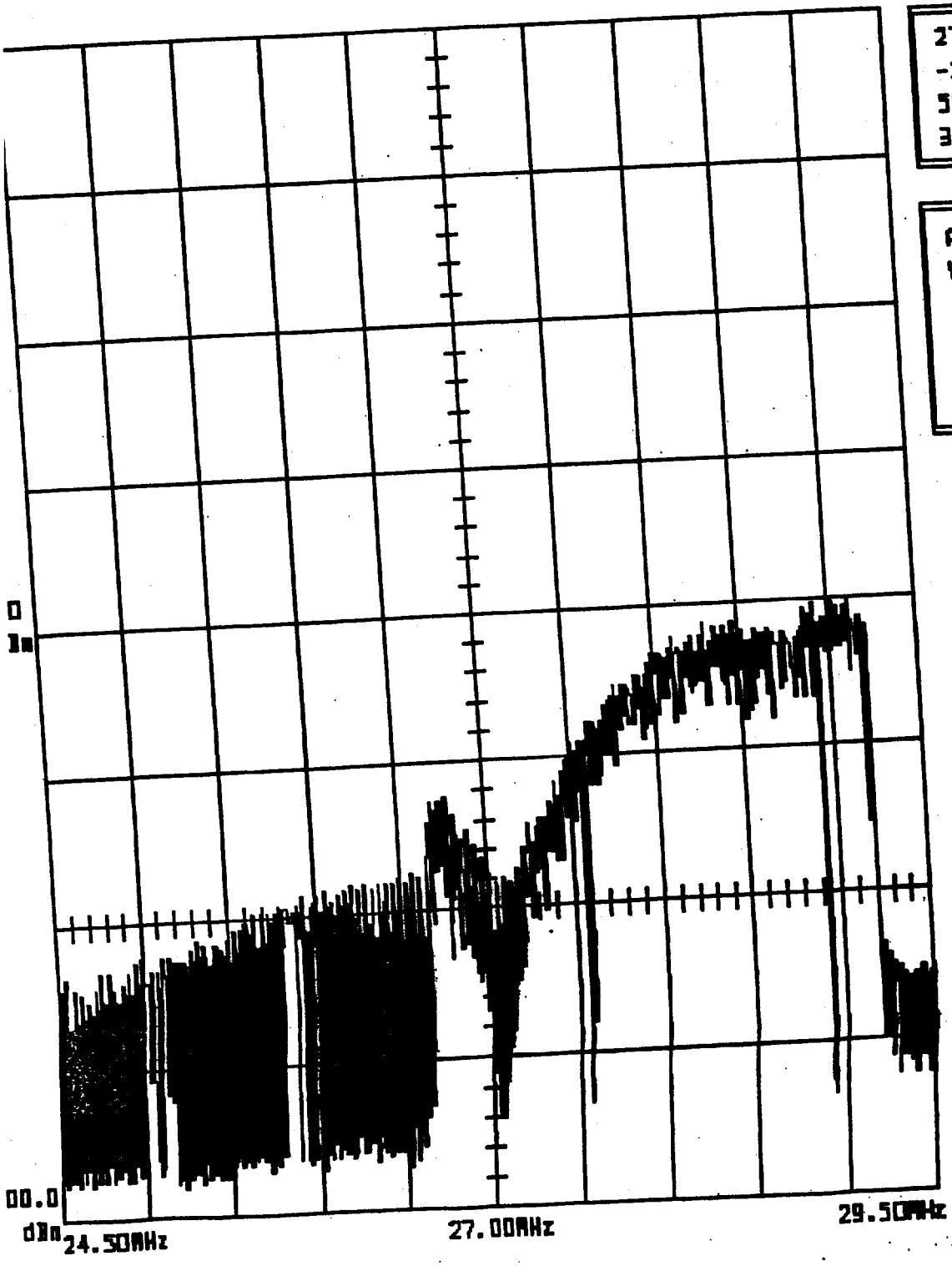
B-

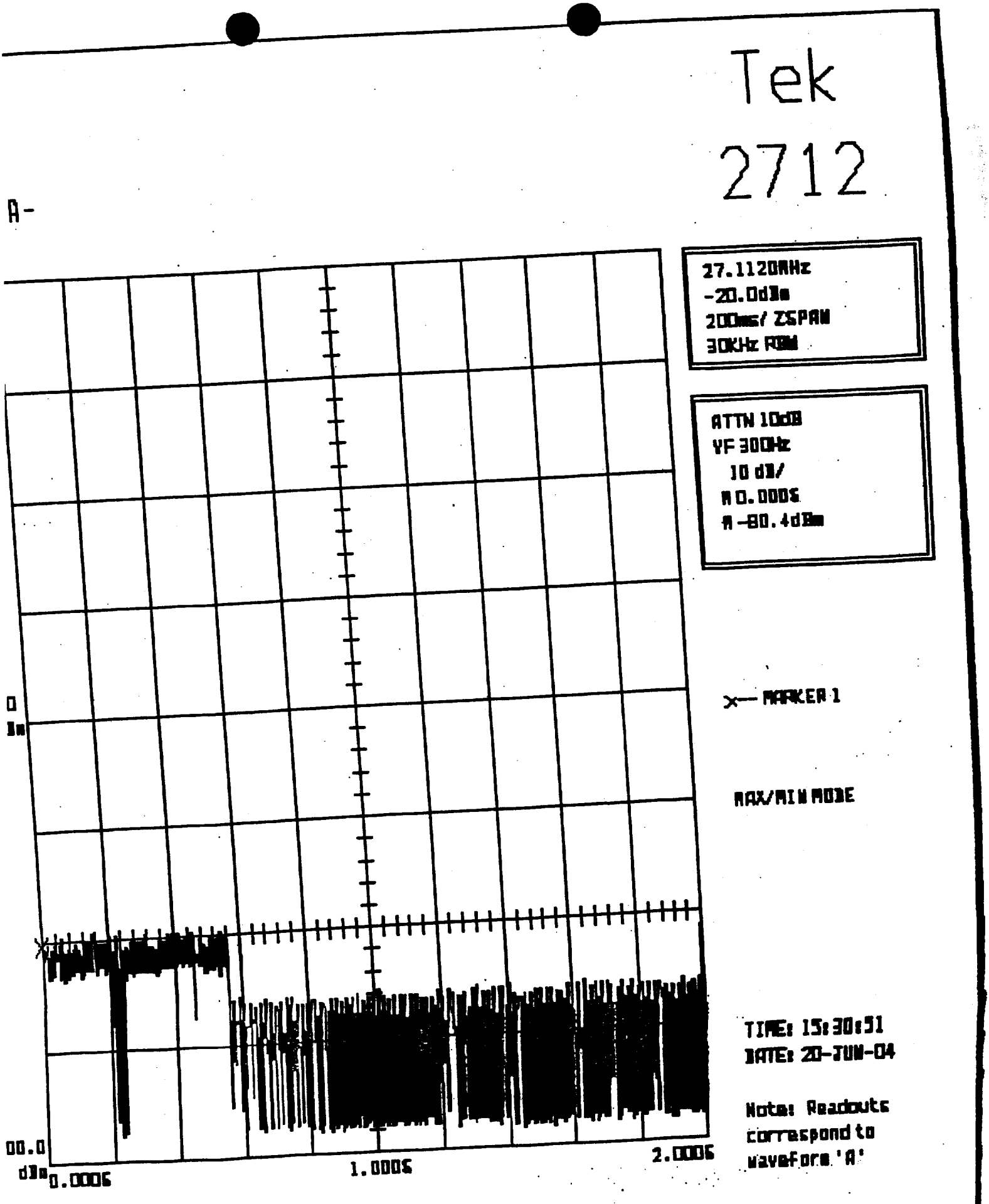

27.00MHz
-20.0dBm
500.0kHz/
30KHz RBW
ATTN 10dB
VF 300Hz
10 dB/
TIME: 200 ms/DIV
0
dBm
MAX/MIN MODE
TIME: 15:58:21
DATE: 20-JUN-04
Note: Readouts
correspond to
waveform 'B'
10.0
dBm
24.50MHz
27.00MHz
29.50MHz

Tek

2712

A-

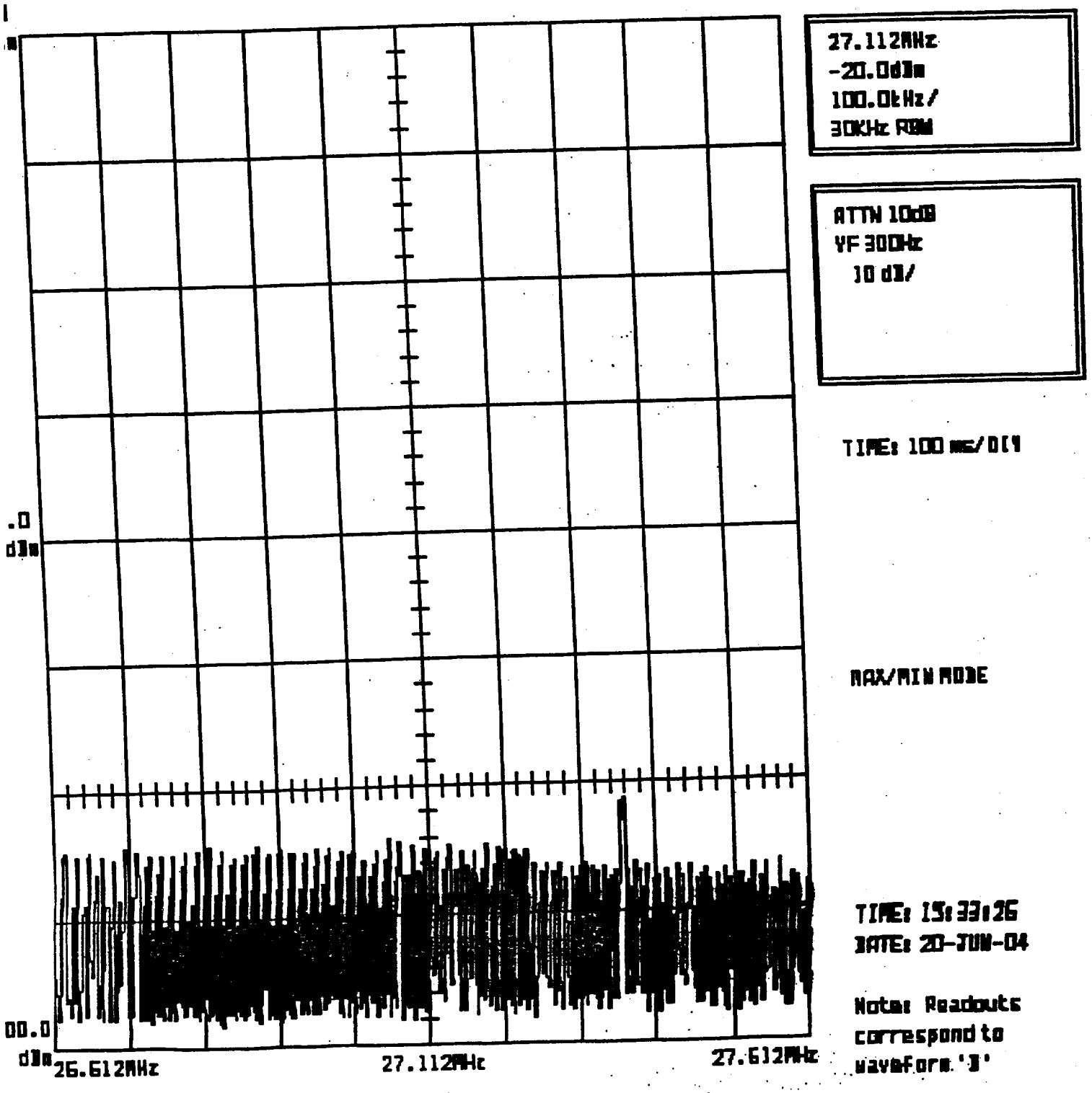

27.00MHz
-20.0dBm
500.0kHz/
30KHz RBW
ATTN 10dB
VF 300Hz
10 dB/
TIME: 200 ms/DIV
0
dBm
MAX/MIN MODE
TIME: 15:57:23
DATE: 20-JUN-04
Note: Readouts
correspond to
waveform 'A'
00.0
dBm
24.50MHz
27.00MHz
29.50MHz


Tek
2712
A-
27.112000MHz
-20.0dBm
200ms/ ZSPAN
30KHz RBW
ATTN 10dB
VF 300Hz
10 dB/
Δ 0.000S
Δ -80.4dBm
0
dBm
MARKER 1
MAX/MIN MODE
TIME: 15:30:51
DATE: 20-JUN-04
Note: Readouts
correspond to
waveform 'A'
00.0
dBm
0.000S
1.000S
2.000S

Tek

2712

B-


27.112MHz
-20.0dBm
100.0kHz/
30KHz RBW
ATTN 10dB
VF 300Hz
10 dB/
TIME: 100 ms/DIV
.0
dBm
MAX/MIN MODE
00.0
dBm
26.612MHz
27.112MHz
27.612MHz
TIME: 15:33:26
DATE: 20-JUN-04
Note: Readouts
correspond to
waveform 'B'

Baseline Test Results Exhibit #1

The following baseline readings were recorded from the fixed station site of Mike Kinney, Call Sign KU7W, located at 1652 E. Sierra Drive Cottonwood, AZ. The reported S-meter reading recorded on January 10, 2004 and January 11, 2004 reflect fairly typical noise levels at this site at different times of the day in different frequency ranges as depicted in the baseline report. Highest reading recorded was S-8 on a vertical 10 through 40 meter antenna.

Equipment used in Exhibit #1:

Receiver- Icom IC 746 solid state

Mode- SSB

Bandwidth- 2.4 Khz filter

RF Gain- Maximum, as usually set

Pre-amp- Off

Antennas and feedline used in Exhibit #1:

Folded Dipole #1- Barker Williams 90 foot all band in an inverted V configuration- apex height 33 feet, end height 15 feet.

Feedline- LMR 400 Flex
Length- 73 feet
Distance to electrical distribution lines- 36 feet
Distance from house electrical system- 8 feet to 14 feet
Distribution lines are underground at this location

Vertical Antenna #2- Cushcraft R-8 vertical 10 through 40 meters

Feedline- LMR 400 solid
Length- 100 feet
Distance to electrical distribution lines- 36 feet
Distance to house electrical system- 17 feet
Distribution lines are underground at this location

MONITORING LOG FOR:
KU7W Mike Kinney Station Location- 1652 E. Sierra drive Cottonwood, Az.
(Mode- ssb) (RF Gain- Maximum)

Date	Local Time	Mode	Frequency Monitored	S- Level	Antenna
1/10/2004	8:11am		3.5 mhz- 4 mhz	S-1	Folded dipole
			3.5 mhz- 4 mhz	S-1	R-8 vertical
1/10/2004	8:22am		7 mhz- 7.3 mhz	S-1	Folded dipole
			7 mhz- 7.3 mhz	S-5	R8 vertical
1/10/2004	8:32am		10.1 mhz- 10.150 mhz	S-1	Folded dipole
			10.1 mhz- 10.150 mhz	S-5	R8 vertical
1/10/2004	8:40 AM		14 mhz- 14.350 mhz	S-0	Folded dipole
			14 mhz- 14.350 mhz	S-5	R-8 vertical
1/10/2004	8:50am		18.068mhz-18.168 mhz	S-0	Folded dipole
			18.068 mhz- 18.168 mhz	S-5	R-8 vertical
1/10/2004	8:59am		21 mhz-21.450 mhz	S-0	Folded dipole
			21 mhz- 21.450 mhz	S-1	R-8 vertical
1/10/2004	9:06am		24.890 mhz- 24.990 mhz	S-0	Folded dipole
			24.890 mhz- 24.990 mhz	S-6	R-8 vertical
1/10/2004	9:12am		28 mhz- 29.700 mhz	S-0	Folded dipole
			28 mhz- 29.700 mhz	S-4	R-8 vertical

Time ended 9:22 am

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1/10/2004	1:36 PM		3.5 mhz- 4.000 mhz	S-1	Folded dipole
			3.5 mhz- 4.000 mhz	S-0	R-8 vertical
1/10/2004	1:43 PM		7 mhz- 7.300 mhz	S-1	Folded dipole
			7 mhz- 7.300 mhz	S-4	R-8 vertical
1/10/2004	1:52 PM		10.100 mhz- 10.150 mhz	S-0	Folded dipole
			10.100 mhz- 10.150 mhz	S-2	R-8 vertical
1/10/2004	1:55 PM		14 mhz- 14.350 mhz	S-1	Folded dipole
			14 mhz- 14.350 mhz	S-1	R-8 vertical
1/10/2004	2:03 PM		18.068 mhz- 18.168 mhz	S-1	Folded dipole
			18.068 mhz- 18.168 mhz	S-3	R-8 vertical
1/10/2004	2:07 PM		21 mhz- 21.450 mhz	S-0	Folded dipole
			21 mhz- 21.450 mhz	S-2	R-8 Vertical

1/10/2004	2:13 PM	24.890 mhz- 24.990 mhz	S-1	Folded dipole
		24.890 mhz- 24.990 mhz	S-1	R-8 vertical
1/10/2004	2:17 PM	28 mhz- 29.700 mhz	S-0	Folded dipole
		28 mhz- 29.700 mhz	S-2	R-8 vertical

Time ended- 2:30 pm

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1/11/2004	8:16am	3.5 mhz- 4.000 mhz	S-0	Folded dipole
		3.5 mhz- 4.000 mhz	S-0	R-8 vertical
1/11/2004	8:22 AM	7 mhz- 7.300 mhz	S-1	Folded dipole
		7 mhz- 7.300 mhz	S-5	R-8 vertical
1/11/2004	8:29 AM	10.100 mhz- 10.150 mhz	S-0	Folded dipole
		10.100 mhz- 10.150 mhz	S-3	R-8 vertical
1/11/2004	8:33 AM	14 mhz- 14.350 mhz	S-0	Folded dipole
		14 mhz- 14.350 mhz	S-0	R-8 vertical
1/11/2004	8:39 AM	18.068 mhz- 18.168 mhz	S-0	Folded dipole
		18.068 mhz- 18.168 mhz	S-0	R-8 vertical
1/11/2004	8:42 AM	21 mhz- 21.450 mhz	S-0	Folded dipole
		21 mhz- 21.450 mhz	S-1	R-8 vertical
1/11/2004	8:47 AM	24.890 mhz- 24.990 mhz	S-0	Folded dipole
		24.890 mhz- 24.990 mhz	S-0	Folded dipole
1/11/2004	8:51 AM	28 mhz- 29.700 mhz	S-0	Folded dipole
		28 mhz- 29.700 mhz	S-0	R-8 vertical

Time ended- 9:00 am

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1/11/2004	3:31 PM	3.500 mhz-4.000 mhz	S-0	Folded dipole
		3.500 mhz- 4.000 mhz	S-0	R-8 vertical
1/11/2004	3:39 PM	7.000 mhz- 7.300 mhz	S-1	Folded dipole
		7.000 mhz- 7.300 mhz	S-7	R-8 vertical
1/11/2004	3:44 PM	10.100 mhz- 10.150 mhz	S-0	Folded dipole
		10.100 mhz- 10.150 mhz	S-7	R-8 vertical
1/11/2004	3:48 PM	14.000mhz- 14.350 mhz	S-0	Folded dipole
		14.000 mhz- 14.350 mhz	S-6	R-8 vertical
1/11/2004	3:58 PM	18.068 mhz- 18.168 mhz	S-1	Folded dipole
		18.068 mhz- 18. 168 mhz	S-5	R-8 vertical
1/11/2004	4:08 PM	21.000 mhz- 21.450 mhz	S-0	Folded dipole
		21.000 mhz- 21.450 mhz	S-4	R-8 vertical